

decomposition portion, decomposing each of the tiles into subbands and performing separate wavelet-encoding of each of the tiles;

a management information generating portion for generating management information necessary for independently decoding any desirable tile on a subband-by-subband basis; and

a coded data integrating portion for attaching the management information to the coded information to generate a bit stream, wherein the management information includes information on a location of each of the tiles coded information in the bit stream and information for managing and identifying each of the subbands.

39. An image coding device as defined in claim 38, wherein the management information generating portion generates information on a size of coded information of each of the tiles to identify location of the coded information for each of the tiles in the bit stream.

40. An image coding device as defined in claim 38, wherein the management information generating portion generates a start code indicating a top element position of coded information of each of the tiles to identify location of the coded information for each of the tiles in the bit stream.

41. An image coding device as defined in any of claims 38 to 40, wherein the management information generating portion further generates ID information showing a location of each of the tiles on the original image as the management information.

42. An image coding device as defined in any of claims 38 to 40, wherein the tile decomposition portion decomposes original

image data into the tiles each of N pixels x M pixels, multiplies each tile image data plus adjacent image data by a predetermined two-dimensional window function and outputs resultant data as objective data for each of the tiles.

43. An image coding device as defined in claim 41, wherein the tile decomposition portion decomposes original image data into the tiles each of N pixels x M pixels, multiplies each tile image data plus adjacent image data by a predetermined two-dimensional window function and outputs resultant data as objective data for each of the tiles.

44. An image coding device comprising:

a tile decomposition portion for decomposing image data into tiles each of N pixels x M pixels and outputting the N x M pixels in the tile as an objective data to be coded for a corresponding each of the tiles;

an adjacent pixel adding portion for providing a objective tile to be coded with adjacent pixels necessary for wavelet transformation of the objective tile when such pixels exist at the periphery thereof;

a wavelet coding portion for extrapolating a predetermined data when no pixel existing at the periphery of the objective tile, decomposing each of the tiles into subbands and outputting only wavelet coefficients of the objective tile;

a management information generating portion for generating management information necessary for independently decoding any desirable tile on a subband-by-subband basis; and

a coded data integrating portion for attaching the management information to coded information to generate a bit stream, wherein the management information includes information on a location of the coded information for each of the tiles in the bit stream and information for managing and identifying each of the subbands.

45. An image coding device as defined in claim 44, wherein the management information generating portion further generates ID information specifying a location of each of the tiles on the original image and ID information specifying locations of adjacent tiles around the objective tile on the original image as the management information.

46. An image coding device as defined in claim 44 or 45, wherein the each adjacent pixel to be attached to the objective tile is multiplied by a weighting function according to a distance from the objective tile, when each of the objective tiles is attached the adjacent pixel by the adjacent pixel adding portion.

47. An image coding device comprising:

a wavelet coding portion for decomposing an image into subbands by extrapolating a predetermined data at the periphery of the image and performing wavelet encoding of the subbands;

a tile composing portion for reconstructing, from wavelet coefficient inputted from the wavelet coding portion, tiles each of  $N \times M$  wavelet coefficients spatially responding to respective tiles to be entropy coded;

a management information generating portion for generating management information necessary for independently decoding any desirable tile on a subband-by-subband basis; and

a coded data integrating portion for attaching the management information to coded information to generate a bit stream, wherein the management information includes information on a coded information location of each of the tiles in the bit stream and information for managing and identifying each of the subbands.

48. An image coding device as defined in any of claims 38, 39, 40, 44, 45, or 47, wherein the wavelet coding portion is provided with a memory necessary for storing at least data for a tile.

49. An image coding device as defined in claim 41, wherein the wavelet coding portion is provided with a memory necessary for storing at least data for a tile.

50. An image coding device as defined in claim 42, wherein the wavelet coding portion is provided with a memory necessary for storing at least data for a tile.

51. An image coding device as defined in claim 43, wherein the wavelet coding portion is provided with a memory necessary for storing at least data for a tile.

52. An image coding device as defined in claim 46, wherein the wavelet coding portion is provided with a memory necessary for storing at least data for a tile.

-----

53. An image coding device as defined in any of claims 38, 39, 40, 44, 45, or 47, wherein the wavelet coding portion performs

multiple times of the subband decomposition process by selectively applying suitable filters for respective subbands.

54. An image coding device as defined in claim 41, wherein the wavelet coding portion performs multiple times of the subband decomposition process by selectively applying suitable filters for respective subbands.

55. An image coding device as defined in claim 42, wherein the wavelet coding portion performs multiple times of the subband decomposition process by selectively applying suitable filters for respective subbands.

56. An image coding device as defined in claim 43, wherein the wavelet coding portion performs multiple times of the subband decomposition process by selectively applying suitable filters for respective subbands.

57. An image coding device as defined in claim 46, wherein the wavelet coding portion performs multiple times of the subband decomposition process by selectively applying suitable filters for respective subbands.

58. An image coding device as defined in claim 48, wherein the wavelet coding portion performs multiple times of the subband decomposition process by selectively applying suitable filters for respective subbands.

59. An image coding device as defined in claim 49, wherein the wavelet coding portion performs multiple times of the subband

decomposition process by selectively applying suitable filters for respective subbands.

60. An image coding device as defined in claim 50, wherein the wavelet coding portion performs multiple times of the subband decomposition process by selectively applying suitable filters for respective subbands.

61. An image coding device as defined in claim 51, wherein the wavelet coding portion performs multiple times of the subband decomposition process by selectively applying suitable filters for respective subbands.

B. Sub CO  
62. An image coding device as defined in claim 52, wherein the wavelet coding portion performs multiple times of the subband decomposition process by selectively applying suitable filters for respective subbands.

63. An image coding device having a combination of plural coding models selectable from claims 38, 39, 40, 44, 45, and 47 and having a plurality of selectively applicable coding modes, which further includes a flag generator for generating flags indicating respective coding modes and a control portion for controlling the coding device in a mode specified by the flag generated by the flag generating portion, wherein the management information generating portion generates management information including the flags generated by the flag generating portion.

64. An image coding device having a combination of plural coding models selectable from claim 41 and having a plurality of selectively applicable coding modes, which further includes a flag

generator for generating flags indicating respective coding modes and a control portion for controlling the coding device in a mode specified by the flag generated by the flag generating portion, wherein the management Information generating portion generates management information including the flags generated by the flag generating portion.

65. An image coding device having a combination of plural coding models selectable from claim 42 and having a plurality of selectively applicable coding modes, which further includes a flag generator for generating flags indicating respective coding modes and a control portion for controlling the coding device in a mode specified by the flag generated by the flag generating portion, wherein the management Information generating portion generates management information including the flags generated by the flag generating portion.

66. An image coding device having a combination of plural coding models selectable from claim 43 and having a plurality of selectively applicable coding modes, which further includes a flag generator for generating flags indicating respective coding modes and a control portion for controlling the coding device in a mode specified by the flag generated by the flag generating portion, wherein the management Information generating portion generates management information including the flags generated by the flag generating portion.

67. An image coding device having a combination of plural coding models selectable from claim 46 and having a plurality of selectively applicable coding modes, which further includes a flag

CB  
COPY

generator for generating flags indicating respective coding modes and a control portion for controlling the coding device in a mode specified by the flag generated by the flag generating portion, wherein the management Information generating portion generates management information including the flags generated by the flag generating portion.

68. An image coding device having a combination of plural coding models selectable from claim 48 and having a plurality of selectively applicable coding modes, which further includes a flag generator for generating flags indicating respective coding modes and a control portion for controlling the coding device in a mode specified by the flag generated by the flag generating portion, wherein the management Information generating portion generates management information including the flags generated by the flag generating portion.

B1

69. An image coding device having a combination of plural coding models selectable from claim 49 and having a plurality of selectively applicable coding modes, which further includes a flag generator for generating flags indicating respective coding modes and a control portion for controlling the coding device in a mode specified by the flag generated by the flag generating portion, wherein the management Information generating portion generates management information including the flags generated by the flag generating portion.

70. An image coding device having a combination of plural coding models selectable from claim 50 and having a plurality of selectively applicable coding modes, which further includes a flag



generator for generating flags indicating respective coding modes and a control portion for controlling the coding device in a mode specified by the flag generated by the flag generating portion, wherein the management Information generating portion generates management information including the flags generated by the flag generating portion.

71. An image coding device having a combination of plural coding models selectable from claim 51 and having a plurality of selectively applicable coding modes, which further includes a flag generator for generating flags indicating respective coding modes and a control portion for controlling the coding device in a mode specified by the flag generated by the flag generating portion, wherein the management Information generating portion generates management information including the flags generated by the flag generating portion.

72. An image coding device having a combination of plural coding models selectable from claim 52 and having a plurality of selectively applicable coding modes, which further includes a flag generator for generating flags indicating respective coding modes and a control portion for controlling the coding device in a mode specified by the flag generated by the flag generating portion, wherein the management Information generating portion generates management information including the flags generated by the flag generating portion.

73. An image coding device having a combination of plural coding models selectable from claim 53 and having a plurality of selectively applicable coding modes, which further includes a flag

generator for generating flags indicating respective coding modes and a control portion for controlling the coding device in a mode specified by the flag generated by the flag generating portion, wherein the management Information generating portion generates management information including the flags generated by the flag generating portion.

74. An image decoding device for receiving at its input a bit stream of coded information including:

coded information of image data divided into tiles each containing N pixels x M pixels and separately wavelet-encoded;

tile position information for specifying a location of a coded information for each tile in the bit-stream; and-management information for managing and identifying subbands generated by wavelet-encoding of the tiles and for selectively decoding a coded image corresponding to a necessary tile and subbands, comprising:

a management information separating portion for separating management information from an input bit stream;

a coded data extracting portion for extracting coded information part corresponding to an objective tile and, subbands according to the management information;

a wavelet decoding portion for conducting wavelet-decoding of the coded information extracted by the coded data extracting portion; and

a tile-combining portion for combining decoded images on a tile-by-tile basis into a desired decoded image.

75. An image decoding device as defined in claim 74, wherein the coded data extracting portion extracts only specified coded

information according to information for specifying a size of each of the tiles, the information given as the information for specifying a location of a coded information for each tile in the bit-stream, and outputs the extracted information to the wavelet decoding portion.

76. An image decoding device as defined in claim 74, wherein the coded data extracting portion extracts only specified coded information according to a start code for specifying a top element position of each of the tiles, the start code given as the information for specifying a location of a coded-information for each tile in bit-stream, and outputs the extracted information to the wavelet decoding portion.

31 77. An Image decoding device as defined in any of claims 74 to 76, wherein the coded data extracting portion extracts only specified coded information according to ID information added as the management information for specifying a location of each tile on a scene, and outputs the extracted information to the wavelet decoding portion.

78. An image decoding device for receiving at its input a bit stream of coded information including:

coded information of image data divided into tiles each containing N pixels x M pixels and separately wavelet-encoded after multiplying each of the tiles data plus adjacent pixel data by a specified two-dimensional window function;

tile-position information for specifying a location of each of the tiles in the coded information bit-stream; and management information for managing and identifying subbands generated when

wavelet-encoding of the tiles, and for decoding a coded image corresponding to a necessary tile and subbands, comprising:

a management information separating portion for separating management information from the input bit stream;

a coded data extracting portion for extracting coded information part corresponding to an objective tile and subbands according to the management information;

a wavelet decoding portion for conducting wavelet-decoding of the coded information extracted by the coded data extracting portion; and

a tile integrating portion for arranging wavelet decoded data at respective places on an original image and superposing image values at overlaps of neighboring tiles to integrate the tiles into a desired decoded image.

79. An image decoding device for receiving at its input a bit stream of coded information including:

coded information of image data divided into tiles, each of the tiles containing N pixels x M pixels and separately wavelet-encoded after attaching thereto adjacent pixels necessary for wavelet-translation the tile;

tile-position information for specifying the location of the coded information for each tile in the bit -stream; and

management information for managing and identifying subbands generated when wavelet-encoding of the tiles, and for decoding a coded image corresponding to a necessary tile and subbands, comprising:

a management information separating portion for separating management information from an input bit stream;

a coded data extracting portion for extracting coded information of an objective tile, tiles existing around the objective tile and that of subbands related according to the management information;

a wavelet decoding portion for conducting wavelet-decoding of the coded information extracted by the coded data extracting portion; and

a tile integrating portion for arranging wavelet-decoded data at respective places on an original image and superposing overlapped-part-image values at each overlap of neighboring tiles to integrate the tiles into a desired decoded image.

80. An image decoding device as defined in claim 79, wherein the coded data extracting portion extracts only specified coded information according to ID information for specifying location of each of the tiles on a scene and adjacent tile ID information for specifying location of adjacent tiles on a scene, which are added as the management information, and outputs the extracted information to the wavelet coding portion.

B1 81. An image decoding device for receiving at its input a bit stream of coded information including:

coded information generated by subband division of image data, tile construction by grouping N pixel x M pixel wavelet coefficients spatially corresponding to the tile and entropy-encoding on a tile-by-tile basis;

tile-position information for specifying a location of each of the tiles in the coded information bit-stream; and

management information for managing and identifying subbands generated when wavelet-encoding of the tiles and for (selectively) decoding a coded image corresponding to a necessary tile and subbands, comprising:

a management information separating portion for separating management information from the input bit stream;

a coded data extracting portion for extracting coded information of an objective tile and subbands according to the management information;

a wavelet decoding portion for conducting wavelet-decoding of the coded information extracted by the coded data extracting portion; and

a wavelet-coefficient rearranging portion for rearranging the wavelet-coefficients arranged per tile inputted in the wavelet decoding portion to the initial order before decomposition into tiles.

82. An image decoding device as defined in any of claims 74, 75, 76, 78, 79, 80, or 81, wherein the wavelet decoding portion includes a memory necessary for storing data at least for the tile.

83. An image decoding device as defined in claim 77, wherein the wavelet decoding portion includes a memory necessary for storing data at least for the tile.

84. An image decoding device as defined in any of claims 74, 75, 76, 78, 79, 80, or 81, wherein the wavelet decoding portion repeats multiple times the subband composition with use of filters changeable in every iteration.

85. An image decoding device as defined in claim 77, wherein the wavelet decoding portion repeats multiple times the subband composition with use of filters changeable in every iteration.

86. An image decoding device as defined in claim 82, wherein the wavelet decoding portion repeats multiple times the subband composition with use of filters changeable in every iteration.

87. An image decoding device having a combination of plural decoding systems selectable from claims 74, 75, 76, 78, 79, 80, or

81 and having plural decoding modes selectively applicable, which further includes:

a management information separating portion for separating management Information from the input bit stream;

a flag extracting portion for extracting from the management information a flag for specifying a coding mode used when the received information was coded; and

a control portion for controlling the decoding device to be activated in a decoding mode corresponding to the coding mode specified by the extracted coding flag.

B1 88. An image decoding device having a combination of plural decoding systems selectable from claim 77 and having plural decoding modes selectively applicable, which further includes:

a management information separating portion for separating management Information from the input bit stream;

a flag extracting portion for extracting from the management information a flag for specifying a coding mode used when the received information was coded; and

a control portion for controlling the decoding device to be activated in a decoding mode corresponding to the coding mode specified by the extracted coding flag.

89. An image decoding device having a combination of plural decoding systems selectable from claim 82 and having plural decoding modes selectively applicable, which further includes:

a management information separating portion for separating management Information from the input bit stream;